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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
APPLICATION FOR UNITED STATES LETTERS PATENT

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TITLE:	Travel Fares Packaging System and Method
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TRAVEL FARES PACKAGING SYSTEM AND METHOD

Incorporated by reference are computer program listings attached as Appendices A and B. Appendices A and B are submitted concurrently herewith on a compact disc labeled by at least the title and inventors associated with this application. On the compact disc, Appendix A is contained within the file named "AppendixA.txt", and is 320 kilobytes in size. Appendix B is contained within the file named "AppendixB.txt", and is 3 kilobytes in size.

RELATED APPLICATIONS

Applicants hereby claim priority under 35 U.S.C. § 119(e) to provisional U.S. patent application Ser. No. 60/212,847, filed on June 20, 2000, incorporated herein by reference.

BACKGROUND OF THE INVENTION

This invention relates to travel services. In particular, the present invention relates to systems and methods for conveniently packaging travel services for a customer.

In the travel industry, services are frequently bundled into a package for the convenience of customers. This packaging of travel services typically is marketed toward leisure travelers as opposed to business travelers. For instance, a travel package may provide a customer with one-stop shopping for an entire vacation, including airfare, lodging, ground transportation, and even recreational activities. Known methods of packaging travel services are employed by travel agents and wholesalers. Traditionally, wholesalers have packaged travel services and made the packages available to travel agents who then sold the packages to customers. More recently, wholesalers have begun to sell travel packages directly to customers via the Internet. In either case, the packages are created using a global distribution system such as

Galileo or Sabre. Individual travel services are identified via the global distribution systems and combined into a package.

According to known methods, such services are usually pre-packaged for general marketing purposes. Alternatively, a custom package may be assembled in response to the parameters of a particular customer request. However, there are at least three significant limitations to known methods of custom travel service packaging. First, accessing the global distribution systems requires special proprietary computer terminals, which are not directly available to customers. Second, custom packages must be created manually, which requires significant time and effort. Third, not all available travel services are accessible via global distribution systems.

Global distribution systems maintain databases of travel service data on proprietary mainframe computers. Data pertaining to service availability and fares are collected from providers such as airlines, hotels, car rental agencies, and recreational/entertainment service providers and published on the proprietary databases. Travel agents and wholesalers then access the data via proprietary computer terminals that communicate with the mainframe computer. Neither these computer terminals nor the travel service data are directly available to customers.

Wholesalers offer some pre-packaged travel services to customers, usually via travel agents. However, if these pre-selected packages do not suit a customer's needs, the travel agent must manually select individual travel services, via the global distribution systems, to create a customized package. This process of creating custom travel packages using the global distribution systems is difficult and time-consuming. A more convenient system for packaging travel services is therefore needed. Preferably, this system would not involve proprietary computer hardware.

Although some known systems, such as current Internet-based travel agency systems, offer a certain degree of convenience for customers, these systems are still bound by the limitations of the global distribution systems. For instance, customers do not have access to all available travel services via the global distribution systems. The airline industry is an example of this.

Airlines typically reserve a certain number of seats on each flight for leisure purposes. The fares associated with these seats are generally lower than standard full fares. Airlines usually publish fares for a flight many months in advance of the scheduled flight. At this time, both the lower leisure fares and the regular full fares are released for publication. The fare data are collected by a fare publisher such as the Airline Tariff Publishing Company (ATPCO). The fare publisher then distributes the fare data to the global distribution systems.

Using the proprietary terminals described above, travel agents and wholesalers access the fare data via the global distribution systems. Travel agents typically have access only to public fares on the global distribution systems. In contrast, wholesalers frequently have access to private fares that are arranged by agreement with specific service providers. The agreements typically require wholesalers to sell private fares only as part of a travel package. Service providers are able to restrict private fare access to only those wholesalers with whom the providers have these packaging agreements. As a result, travel agents do not have access to private fares, even for purposes of packaging.

Travel agents also may not have access to many short-term fares — fares for those services that are purchased shortly before they are to be used. As the scheduled date of departure for a given airline flight approaches, leisure fares are typically removed from the global distribution systems. After this time, the majority of leisure fares are no longer available via the global distribution systems. Because leisure travelers usually purchase airline tickets well in advance of their expected travel dates, demand for short-term leisure fares is usually low. These short-term leisure fares are part of a category referred to as special fares. The special fares category also may include other fares for which demand is lower than normal, or fares that are targeted at specific groups of customers. Airlines frequently desire to sell special fares without shifting demand from other markets such as business travel. Accordingly, airlines have sought ways to market special fares in a way that spurs demand without interfering with other markets. For instance,

some airlines have offered short-term special fares through targeted marketing campaigns shortly before the departure date of a scheduled flight. However, other methods of marketing special fares are still needed.

5   Packaging provides an ideal vehicle for marketing special fares. For a number of reasons, however, service providers have been unable to market certain special fares through travel packages. For example, wholesalers generally require significant lead time to prepare a travel package. This type of lead time is not available when it comes to marketing short-term special fares. In addition, travel service providers have lacked the means to

10   effectively collaborate with each other in an effort to combine their special fares into travel packages. Accordingly, there remains a need for a method of packaging special fares in packages with other travel services in a way that avoids interfering with other travel service markets. The method preferably would enable travel service providers to collaborate to create travel packages

15   that suit their business needs.

It is, therefore, an object of the present invention to provide an improved system and method for conveniently packaging travel services for customers. It is also an object of the present invention to provide an improved system and method for customizing travel service packages in accordance

20   with customer preferences. It is a further object of the present invention to provide an improved system and method for packaging special fares that avoids interfering with other travel service markets. It is an even further object of the present invention to provide an improved system and method for packaging travel services that enables service providers to collaborate in the

25   creation of travel packages.

BRIEF SUMMARY OF THE INVENTION

In accordance with the present invention, a system and method are described for packaging travel services for a customer.

According to one aspect of the present invention, there is provided a

30   method of packaging travel services for a customer. The method includes

defining a travel package profile. The method also includes communicating with a plurality of travel service providers, wherein each of the providers is associated with one or more travel services inventories. A plurality of travel services available from the travel service inventories are identified. One or more of the plurality of travel services is selected in accordance with the travel package profile. The selected travel services are then presented as a package to the customer.

According to another aspect of the invention, there is provided a system for packaging travel services for a customer. The system includes a travel package profile relating to a desired travel service package. Also provided is a market place engine, which is in communication with one or more provider inventory systems. The market place engine is programmable to query the provider inventory systems for updated provider inventory information. A dynamic packaging engine is in communication with both the market place engine and the customer preference database. The dynamic packaging engine is programmable to select a plurality of available travel services according to the updated provider inventory information and the travel service package profile. A customer interface is programmable to present the selected plurality of travel services as a package to the customer.

According to another aspect of the present invention, there is provided a system for packaging travel services for a customer. The system includes an exchange means for sharing information with one or more provider inventory systems to receive one or more updated inventories of available travel services. A packaging means, which is in communication with the exchange means, is provided for selecting a plurality of travel services from the inventories of available travel services. The selection of available travel services is based upon a travel package profile. A presentation means, which is in communication with the packaging means, is provided for presenting the selected travel services as a package to the customer.

BRIEF DESCRIPTION OF THE DRAWINGS

The subsequent description of the preferred embodiments of the present invention refers to the attached drawings, wherein:

FIG. 1 shows a block diagram depicting a packaging system according to one presently preferred embodiment of the invention.

FIG. 2 shows a block diagram depicting in more detail the packaging system of **FIG. 1**.

FIG. 3 shows a flow diagram illustrating interactions with travel service providers in a packaging method according to another presently preferred embodiment of the invention.

FIG. 4 shows a flow diagram illustrating interactions with a customer and with travel service providers in a packaging method according to another presently preferred embodiment of the invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to the accompanying drawings, **FIG. 1** shows a high-level block diagram depicting a packaging system **100** according to one presently preferred embodiment of the invention. The packaging system **100** shown in **FIG. 1** is capable of creating packages of travel services according to at least three different scenarios. The first scenario may be referred to as packaging-on-demand. Packaging-on-demand involves the creation of a travel package in response to a particular customer request. In this case, the package is usually tailored to specific customer travel preferences, such as dates of travel, destination, preferred airline and accommodations, and preferred recreational or entertainment activities.

The second packaging scenario may be referred to as custom pre-packaging. Custom pre-packaging involves the creation of a package based on stored customer preferences. The package is then pro-actively presented to the customer to entice the customer with a package that is tailored to the customer's known preferences.

The third packaging scenario may be referred to as general-availability packaging. General-availability packaging usually involves the creation of a package including travel services that service providers have a particular desire to sell, such as special fares. This allows service providers to market special fares through packages in a way that does not interfere with other travel service markets.

To accomplish these various methods of packaging, the packaging system **100** communicates with a plurality of travel service providers **102** via a distributed computer network **104**. Communication with the travel service providers is accomplished independently of the proprietary global distribution systems. Preferably, the distributed computer network **104** comprises an extranet operating according to open-standard protocols and languages such as the Transmission Control Protocol / Internet Protocol (TCP/IP), the Hypertext Transfer Protocol (HTTP), and the Extensible Markup Language (XML). However, other protocols and languages known in the art are also appropriate for communications between the packaging system **100** and the service providers **102**.

The packaging system **100** communicates with customers **106** via a second distributed computer network **108**. This communication also is independent of the proprietary global distribution systems. Preferably, the second distributed computer network **108** comprises the Internet. In this case, communications between the packaging system **100** and the customers **106** include transmission of email messages and custom web pages.

The packaging system **100** of **FIG. 1** is shown in more detail in the block diagram of **FIG. 2**. The packaging system **100** includes a market place engine **202** and a dynamic packaging engine **204**. Although in this preferred embodiment the market place engine **202** and the dynamic packaging engine **204** are shown as distinct components, it will be understood in the art that the functions of these two elements of the packaging system **100** may be combined into a single component.

The market place engine **202** communicates with travel service providers **102** via a business-to-business hub **206** and a distributed network

104, as described above. The market place engine **202** routes messages to travel service providers **102** to request and receive travel service inventory updates from the providers **102**. Routing rules define the appropriate travel service provider(s) **102** for different types of messages. For instance, if a customer requests information on a European vacation package including a car rental, the market place engine **202** directs a request to only those car rental agencies that operate in Europe. Similarly, a bed-and-breakfast may request a rule dictating that the bed and breakfast not receive requests for lodging in connection with bus tours because it does not have the capacity to host large tour groups. Through this communication with travel service providers **102**, the market place engine **202** is able to exchange inventory information between the service providers **102** and the packaging system **100**. In this sense, the market place engine **202** is preferably in direct communication with the inventory systems of the travel service providers **102** to ensure that the information transferred is as accurate and current as possible. The market place engine **202** also may maintain current service provider inventory information locally in an offering repository **208**.

The dynamic packaging engine **204** communicates with customers **106** via customer interface **210** and distributed network **108**. Preferably, the dynamic packaging engine **204** communicates with the market place engine **202** via a market place engine interface **212**. Depending upon the configuration of the packaging system **100**, however, communication between the market place engine **202** and the dynamic packaging engine **204** may not require the presence of a market place engine interface **212**. In either case, the dynamic packaging engine **204** is capable of receiving service provider inventory information from the market place engine **202** and using the inventory information to create custom packages of travel services. According to the methods described below, the dynamic packaging engine **204** also communicates with customers **106** via the customer interface **210** to receive customer requests and to present travel service packages to the customers **106**. The customer interface includes an HTTP server capable of transmitting custom web pages to customers **106** via the World Wide Web. The customer

interface also may include an email server, such as a Simple Mail Transfer Protocol ("SMTP") server, capable of sending custom email messages to customers **106** via the Internet. For instance, email messages may include offers for custom pre-packaged travel services or for general-availability packages. The dynamic packaging engine **204** also communicates with customers **106** via the customer interface **210** and with the market place engine **202** via the market place engine interface **212** to receive and fulfill customer orders for travel service packages. For instance, after being presented with a travel package, a customer **106** may transmit an order to purchase the package via the customer interface **210**. The dynamic packaging engine **204** receives the customer order and communicates with the appropriate travel service providers **102** via the market place engine **202** to confirm availability of the packaged travel services and to reserve those services on behalf of the customer **106**.

The packaging system **100** also may include a customer preference repository **214**, which contains information regarding customer travel preferences. The dynamic packaging engine **204** may access the customer repository **214** and use the customer travel preferences to proactively create custom travel packages for presentation to the customer. Customer travel preferences may include, for example, a customer's favorite travel destinations and activities. Customer travel preferences also may include details regarding a customer's preferred hotel room type, rental car class, airline seating class, destination, and recreational or entertainment activities desired.

A marketing campaign repository **216** also may be included in the packaging system **100**. The marketing campaign repository **216** stores information regarding specific marketing campaigns. Marketing campaigns are designed to package specific travel services that service providers **102** wish to sell as part of a travel package. For instance, marketing campaigns may be designed to package special fares in the form of a general-availability travel package. Campaign parameters defining the marketing campaign are contained in the marketing campaign repository **216** and used by the dynamic

packaging engine **204** to create specific travel packages in accordance with the marketing campaign.

The packaging system also may included a packaging repository **218**. The packaging repository **218** contains information regarding pre-packaged travel services. These packages, which are also created by the dynamic packaging engine **204**, are typically general-interest in nature. For instance, the packaging repository **218** may contain packages that were created as part of a marketing campaign, possibly to promote special fares. The packages contained in the packaging repository **218** may be presented to customers in response to requests for pre-packaged travel services as opposed to custom travel packages.

In a preferred embodiment of the packaging system **100**, the dynamic packaging engine **204** is embodied by a software program such as one compiled from the source code included in Appendix A. Appendix A includes source code for forty-five JAVA components that may be combined according to methods known in the art to form a preferred embodiment of the dynamic packaging engine **204**. The market place engine **202** preferably is embodied by the WebLogic Collaborate software running on a WebLogic 5.1 application server, both commercially available from BEA Systems, Inc. The market place engine interface **212** preferably is embodied by a software program such as one compiled from the source code included in Appendix B. Appendix B includes source code for two JAVA components that may be combined according to methods known in the art to form a preferred embodiment of the market place engine interface **212**. The offering repository **208**, the customer repository **214**, the marketing campaign repository **216**, and the package repository **218** preferably are hosted in an Oracle 8i database application, which is commercially available from Oracle Corporation of Redwood Shores, California. These systems preferably are maintained on a Sun Enterprise 450 server, commercially available from Sun Microsystems of Palo Alto, California.

The operational methods of the packaging system will now be discussed with reference to **FIGS. 3** and **4**. **FIG. 3** shows a flow diagram

illustrating interactions with travel service providers to receive updated inventory information. In step **302**, the market place engine **202** of the packaging system **100** sends a request to the travel service providers **102** for updated inventory information. As described above, this communication is preferably sent directly to the service providers' inventory systems. The market place engine **202** then receives the most current inventory information from the travel service providers **102** in step **304**. Optionally, the process may begin automatically with step **304**. In this case, the travel service providers **102** send updated inventory information to the dynamic packaging engine **202** without prompting, possibly according to a prearranged update schedule. Once the dynamic packaging engine **202** has received updated inventory information from a service provider, the dynamic packaging engine **202** updates the offering repository to reflect this new information in step **306**. In this way, the packaging system **100** maintains a local database of travel service provider offerings. Similarly, the market place engine **202** also may receive updated travel service packaging rules and routing rules from the service providers **102** in step **308**. The packaging rules define how various travel services may validly be combined to form a travel package. For instance, a rental car provider may offer a discount for its services when packaged in combination with airfare from a particular airline. The routing rules define how the market place engine **202** should route messages to particular service providers **102**, as described above. After receive the rule update, the market place engine **202** updates the offering repository **208** to reflect any new packaging or routing rules in step **310**.

FIG. **4** shows a flow diagram illustrating interactions with a customer **106** and any necessary travel service providers **102** in the context of preparing a travel package for the customer **106**. A custom travel package may be prepared on demand (in response to a specific customer request) or proactively pre-packaged and customized in accordance with stored customer preferences. A general-availability package may be created according to the parameters of a specific marketing campaign. For instance, a campaign may be initiated to market packages including special fares from various service

providers. In any of these cases, the first step **402** is to define a travel package profile. If the package is created on demand, the package profile is defined by receiving a customer request via the customer interface **210**, identifying relevant customer travel preferences, and including these travel preferences in the travel package profile. The customer preferences may derive from the customer request itself, if the customer indicated specific preferences for the present travel package. Alternatively, the relevant customer preferences may be obtained from the customer repository **212**, which includes preferences associated with the customer during previous transactions. If a custom travel package is prepared proactively (not in response to a specific customer request), then the relevant customer travel preferences will generally be obtained from the customer repository **212**.

Whether the travel package is prepared on demand, custom pre-packaged, or packaged for general availability, the next steps are to communicate with travel service providers (step **404**) and to identify relevant and available travel services (step **406**). The packaging system **100** may first check the offering repository **208** for relevant travel services. In this case, the step **404** of communicating with travel service providers **102** will have been performed previously during the process of updating the offering repository as described in connection with **FIG. 3**. If, however, the necessary travel services cannot be identified in the offering repository **208**, the packaging system **100** sends a specific request to the travel service providers **102** for travel service inventory information relevant to the customer's request. Preferably, the dynamic packaging engine **204** creates this request and sends it to the market place engine **202**. The market place engine **202** engine then forwards the request to the appropriate travel service providers **102** and then receives any new responsive inventory information from the service providers **102**.

Once the available travel services have been identified, the dynamic packaging engine **204** selects particular travel services for packaging according to the travel package profile in step **408**. In selecting travel services, the dynamic packaging engine **204** applies any necessary

packaging rules received from the service providers **102**. The packaging system **100** then presents the selected travel services as a package to the customer **106** via the customer interface **210** in step **410**. Presentation of the travel package may occur in a number of ways. For instance, if the travel package is prepared on demand, the packaging system **100** may present the package to the customer **106** in the form of a custom web page. Alternatively, if the package is prepared proactively or for general availability, the packaging system **100** may present the package in the form of an email message to the customer **106**. In a third alternative, the packaging system **100** may notify the customer **106** of a proactively-generated custom travel package or general-availability package via an email message. In this case, the email message would invite the customer **106** to visit a custom web page for presentation of the travel package.

Should the customer **106** decide to purchase the custom travel package, the packaging system **100** next receives the customer's order for the package in step **412**. The dynamic packaging engine **204** then sends a message to the market place engine **202,** causing the market place engine **202** to contact the appropriate travel service providers **102** and verify continuing availability of the selected travel services in step **414**. If the selected travel services are still available, the market place engine **202** reserves the selected services on behalf of the customer **106** in step **416**.

The invention has been described in detail with particular reference to preferred embodiments thereof and illustrative examples, but it will be understood that variations and modifications can be effected within the spirit and scope of the invention.